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WHAT IS CLAIMED IS:

1 1. A method of removing an obstruction, comprising the steps of:
2 providing an obstruction removing device, the obstruction removing device
3 having an element movable from a collapsed position to an expanded position, the element
4 being contained within a lumen in a delivery device in the collapsed position;
5 advancing the delivery device through the patient's vascular system to an
6 obstruction in a vessel;
7 expanding at least part of the engaging element toward the expanded position;
8 coupling the engaging element to a supply of power;
9 moving the engaging element into contact with the obstruction; and
10 supplying power to the element when the engaging element is in contact with
11 the obstruction.

1 2. The method of claim 1, wherein:
2 the coupling step is carried out with the supply of power producing an
3 electrical charge at the engaging element.

1 3. The method of claim 2, wherein:
2 the coupling step is carried out with the supply of power producing a negative
3 charge during the moving step.

1 4. The method of claim 2, wherein:
2 the coupling step is carried out with the supply of power producing a positive
3 charge during the supplying step.

1 5. The method of claim 1, wherein:
2 the coupling step is carried out with the supply of power being an RF
3 generator.

1 6. The method of claim 1, wherein:
2 the providing step is carried out with the engaging element being naturally
3 biased toward the expanded position.

1 7. A method of constructing an obstruction removing device, comprising
2 the steps of:

- 3 providing an elongate element;
4 positioning at least one strand against the elongate element; and
5 positioning a tube over the fiber to trap the fiber.
- 1 8. The method of claim 7, wherein:
2 the positioning step is carried out with the fiber has a diameter of less than
3 0.001 inch.
- 1 9. The method of claim 8, wherein:
2 the positioning step is carried out with the fiber being a thermoplastic
3 multifilament yarn spun from a liquid crystal polymer.
- 1 10. The method of claim 7, wherein:
2 the positioning step is carried out with the elongate element being made of
3 superelastic material.
- 1 11. The method of claim 7, wherein:
2 the positioning step is carried out with the elongate element being naturally
3 biased toward an expanded position.
- 1 12. The method of claim 7, wherein:
2 the positioning step is carried out with the elongate element being biased
3 toward an expanded position.
- 1 13. The method of claim 7, wherein:
2 the providing step is carried out with the diameter of the elongate element
3 being 0.005-0.018 inch.
- 1 14. An obstruction removal device, comprising:
2 an insertion element having an expandable element extending from the
3 insertion element;
4 at least one strand extending along at least the expandable element; and
5 a tube of material which traps the at least one strand.
- 1 15. The device of claim 14, wherein:
2 the strand has a diameter of less than 0.005 inch.

- 1 16. The device of claim 15, wherein:
2 the strand is a thermoplastic multifilament yarn spun from a liquid crystal
3 polymer.
- 1 17. The device of claim 14, wherein:
2 the elongate element being made of superelastic material.
- 1 18. The device of claim 14, wherein:
2 the elongate element having a diameter of 0.005-0.018 inch.
- 1 19. The device of claim 14, wherein:
2 the elongate element being biased toward an expanded position.
- 1 20. The device of claim 14, wherein:
2 the elongate element has an diameter of 0.005-0.010 inch.
- 1 21. A kit for removing an obstruction in a blood vessel, comprising:
2 an obstruction removing device having an elongate insertion element and an
3 expandable obstruction engaging element extending from the elongate insertion element; and
4 a catheter having an expandable balloon mounted thereto, the catheter having
5 at least one lumen sized to receive the obstruction removal device.
- 1 22. The kit of claim 21, further comprising:
2 a delivery catheter which extends through the lumen of the catheter, the
3 delivery catheter having a lumen in which the obstruction removing device is positioned.
- 1 23. The kit of claim 21, wherein:
2 the obstruction engaging element is in a straightened configuration when
3 collapsed.
- 1 24. A method of removing an obstruction in a blood vessel, comprising the
2 steps of:
3 providing an obstruction removal device and a guide catheter, the obstruction
4 removing device having an elongate insertion element and an expandable obstruction
5 engaging element extending from the elongate insertion element, the guide catheter having a

6 flow restricting element mounted thereto, the delivery catheter having at least one lumen
7 sized to receive the obstruction removal device;
8 advancing the obstruction removal device through the guide catheter to an
9 obstruction in a blood vessel;
10 expanding the flow restricting element to at least reduce blood flow in the
11 blood vessel;
12 engaging the obstruction with the obstruction removal device while the flow
13 restricting element is expanded; and
14 removing the obstruction.

1 25. An obstruction removal device, comprising:
2 an elongate element extending from an insertion element, the elongate element
3 being movable from a collapse position to an expanded position, the elongate element
4 forming helical coils having varying diameter, wherein the coils at a distal portion are larger
5 than the coils at an intermediate portion.

1 26. The device of claim 25, wherein:
2 the elongate element has a proximal portion which has coils which are larger
3 than the coils at the intermediate portion.

1 27. A method of removing an obstruction from a patient, comprising the
2 steps of:
3 providing an obstruction removal device, the obstruction removal device
4 having an engaging element extending from an insertion element, the engaging element being
5 movable from a collapsed condition to an expanded condition, the engaging element having a
6 proximal portion and a distal portion;
7 passing the obstruction removal device through an obstruction in a vessel with
8 the engaging element in the collapsed position;
9 expanding the distal portion at a location distal to the obstruction so that the
10 distal portion forms a trap to prevent the obstruction from traveling downstream; and
11 engaging the obstruction with the proximal portion of the obstruction removal
12 device after the expanding step.

1 28. An obstruction removal device, comprising:

2 an elongate insertion element; and
3 an obstruction engaging element extending from the insertion element, the
4 obstruction removing element being movable from a collapsed position to an expanded
5 position, the obstruction removing device forming at least one closed loop in the expanded
6 position, the closed loop exerting substantially equal and opposing radial forces when
7 collapsed.

1 29. The device of claim 28, wherein:
2 the obstruction engaging element forms at least two loops in the expanded
3 position, a first loop lying in a first plane when expanded and a second loop lying in a second
4 plane when expanded.

1 30. The device of claim 29, wherein:
2 the first plane is substantially perpendicular to the first plane.

1 31. The device of claim 29, wherein:
2 the first loop is larger than the second loop, the first loop being positioned
3 distal to the second loop.

1 32. The device of claim 28, wherein:
2 the engaging element is formed by a core element and a filament wrapped
3 around the core element.

1 33. An obstruction removal device, comprising:
2 an elongate insertion element; and
3 an obstruction engaging element movable from a collapsed position to an
4 expanded condition, the engaging element having at least two wound sections having a
5 filament wound around a core element, the wound sections being separated by a section
6 substantially free of the filament.

1 34. The device of claim 33, wherein:
2 the section which is substantially free of the filament is at least 1 mm long.

1 35. The device of claim 33, wherein:
2 the section which is substantially free of the filament is at least 3 mm long.

1 36. The device of claim 33, wherein:
2 the section which is substantially free of the filament is no more than 6 mm
3 long.

1 37. An obstruction removing device, comprising:
2 an elongate insertion element; and
3 an obstruction engaging element movable from a collapsed position to an
4 expanded condition, the engaging element having a first section, a second section, and a third
5 section, the second section being positioned between the first and third sections, the second
6 section forming coils having a smaller diameter than coils formed by the first and third
7 sections.

1 38. The device of claim 37, wherein:
2 the obstruction engaging element has a fourth section and a fifth section, the
3 fourth section being positioned between the third and fifth sections, the fourth section
4 forming coils having a smaller diameter than coils formed by the third and fifth sections.